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## Applications of geometric control

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# STELLINGEN

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## *APPLICATIONS OF GEOMETRIC CONTROL: CONSTRAINED SYSTEMS AND SWITCHED SYSTEMS*

*van*

*MUSTAFA DEVRİM KABA*

1. *The combined setting of geometric control theory and convex/set-valued analysis provides a strong framework to study nonlinear extensions of linear systems, namely constrained systems and switched linear systems.*
2. *The strictness assumption on controllability results of closed convex processes can be relaxed while keeping the conclusions unchanged.*
3. *The classical results on controllability of constrained linear systems (where the constraint set is a convex cone) fall into the general case mentioned in the previous proposition.*
4. *Apart from the widely investigated classical case mentioned in the previous proposition, there exists a second case for which it is possible to formulate a characterization of the controllability of the constrained discrete-time linear system.*
5. *The two cases mentioned in the previous two propositions give an almost complete characterization of controllability for discrete-time linear systems with convex conic output constraints.*
6. *In case the (output) constraint set is not a cone but merely a convex set, it is still possible to provide a characterization for the controllability of the constrained discrete-time linear system in most cases. This can be achieved by using the results on controllability and weak asymptotic stability of convex processes.*
7. *As a very good mathematician once put it right, if you make the right definitions, the results follow.*
8. *After football and ice skating, complaining about the weather is the third popular sport in the Netherlands.*